*****Suspended*****

Trend Study 3-7-96

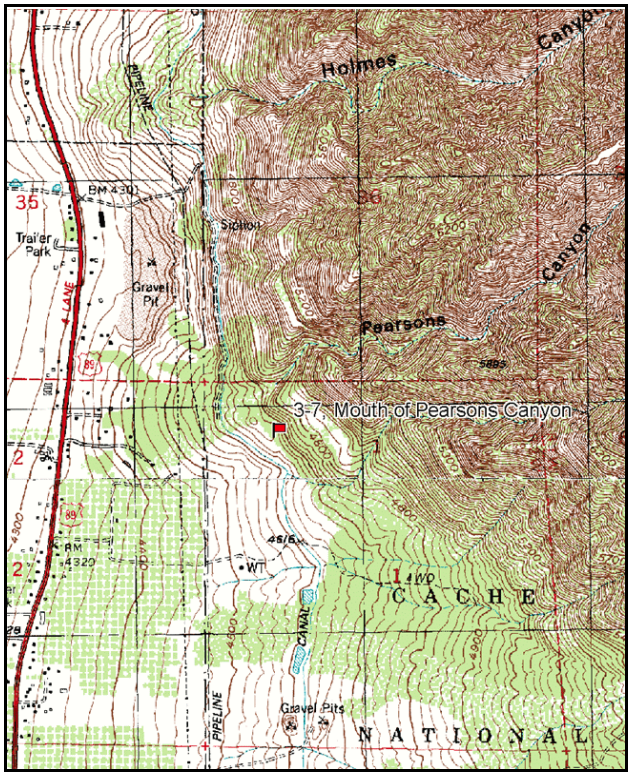
Study site name: Mouth of Pearson's Canyon . Vegetation type: Perennial Grass .

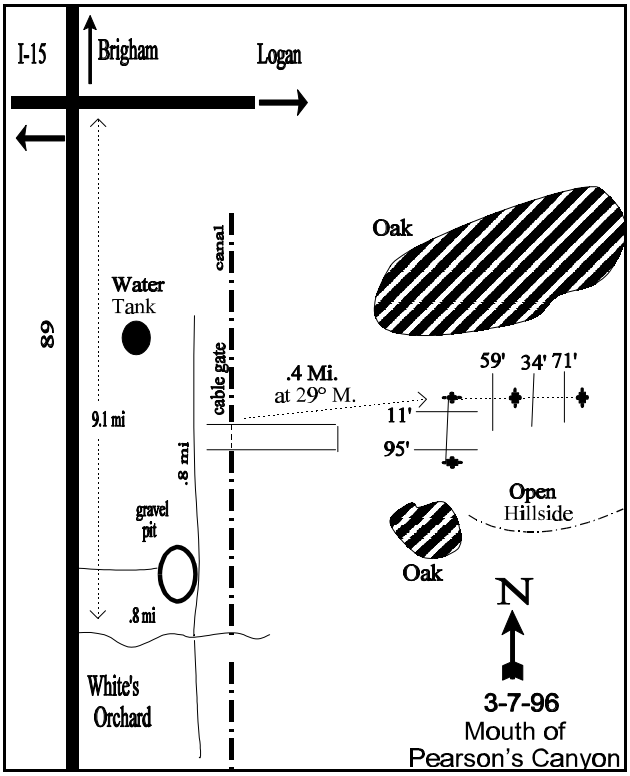
Compass bearing: frequency baseline 165 degrees magnetic.

Frequency belt placement: Line 1 (11 & 95ft), line 2 (59ft), line 3 (34 & 71ft).

LOCATION DESCRIPTION

From the junction of Highway 89 and 91 in Brigham City proceed south on 89 for 9.1 miles. Turn left at White's Orchard and travel east for 0.8 miles. Before crossing the canal turn left (north) and proceed 0.8 miles. Turn right and walk across the canal continuing 0.4 miles at a bearing of 29 degrees magnetic to the 0-foot baseline stake. The 0-foot stake is marked by browse tag #7922. The rest of the baseline doglegs off the 0-foot baseline stake at a bearing of 29 degrees magnetic.





Map Name: Willard

Diagrammatic Sketch

Township 7N , Range 8W , Section 1

UTM 4580879 N 415012 E

DISCUSSION

Trend Study No. 3-7

***SUSPENDED** - This site was suspended in 2001 and will be reevaluated in 2006. This site was evaluated by the Project Leader and was suspended due to low browse abundance and no signs of use by wildlife at the present time. It also is in close proximity to other trend studies in the unit. Text and data tables are included from the 1996 report.

The Mouth of Pearson's Canyon study samples critical deer winter range at 4,680 feet in elevation, thought to be important in the early 1980's. The site has a southwest exposure and a moderate slope of 25%. This entire area is characterized by small to medium sized clumps of Gambel oak separated by larger open areas. The site samples an opening surrounded by various sized oak clones. There is little sagebrush to sample directly on the site. Sagebrush are more abundant lower down the slope. Judging from pellet group frequency and browse utilization, the intensity of deer use is light. The area contains relatively little available browse to attract deer. Even oak clumps have little available forage. Livestock use is light.

Soil at the site is part of the "Ridd Rock Outcrop Complex." These are shallow, very coarse textured, well-drained soils that formed in alluvium and colluvium from quartzite, gneiss and schist. Soil reaction is neutral throughout the 24 inch soil profile. Water permeability is moderately rapid with low water holding capability. The result is a soil that often is totally dry in mid-summer (Chadwick et al. 1975). Soils at the site are fairly deep, dry and gravely with a sandy loam texture and a neutral soil reaction (6.8 pH). Effective rooting depth (see methods) was estimated at 14 inches with a relatively high soil temperature of nearly 76° F at an average depth of 13 inches. Organic matter is relatively low at 1.3%. The study site has fair plant cover composed of perennial grasses, annual grasses and weedy forbs. Relatively little browse is present. The rate of erosion is negligible.

The principle browse species are Wyoming big sagebrush and Gambel oak. The former species constitutes a sparse stand that will probably become even more so in the future. Although existing plants show fair vigor and generally light use, they are currently (1996) so few in number (100 plants/acre) that it is difficult to envision any significant increase because of the competitive nature of the herbaceous understory. Gambel oak occurs as large mature clones that contain little available forage due to its height. Oak shows no sign of expansion or clone enlargement.

Herbaceous composition consists of warm season perennial grasses, annual grasses and forbs, and perennial or biennial weeds. The principal perennial grasses are red three-awn and sand dropseed, both of which are moderately abundant but show no evidence of current or past grazing use. Annual grasses include cheatgrass and rattail fescue, both of which are abundant and account for 79% of the grass cover. The forb composition is extremely poor with common ragweed and hairy goldaster providing 79% of the forb cover. Perennial forbs possessing even moderate forage value are rare.

1984 APPARENT TREND ASSESSMENT

Soil trend seems relatively stable. Although some erosion is apparent, it is not serious. Vegetative trend indicators suggest a declining or at best, stable population of Wyoming big sagebrush. Gambel oak clones are self-sustaining and are neither decreasing or expanding. The most likely trend would seem to be a continued increase in weed densities.

1990 TREND ASSESSMENT

Identified as a perennial grass range type in 1984, the area could also be classified as a oak/sagebrush range type. Most openings on the slope support moderately dense stands of sagebrush, a condition lacking on the study site. While it remains sparse, Wyoming big sagebrush increased in density and in the percentage of seedling and young plants. It is very vigorous with good growth and seed production. The sagebrush do not appear to be browsed and there is no sign of recent deer use. Cows were grazing in the area, apparently for the first time in many years. They prefer sand dropseed, the only palatable herbaceous forage on the site. Dropseed, along with the undesirable three-awn, shows a significant increase in sum of nested frequency since 1984. Other weedy species, especially hairy goldaster and Dyers woad, have also increased. One large, mature oak clone was encountered both years. The soil is shallow and loosely compacted. It is easily disturbed and has a high erosion potential. The soil trend currently appears stable. The vegetative trend is more difficult to assess. With the predominance of invader and increaser species, it is contradictory to assess an improving trend for the site even though sagebrush is increasing. Future management of this private rangeland, where an increase in shrubs is an unlikely goal, will have the greatest impact on the site.

TREND ASSESSMENT
soil - stable (3)
browse - upward, but still only about 500 sagebrush per acre (5)
herbaceous understory - downward, most of the species are weedy increasers, especially three-awn, dyers woad, and hairy goldaster (1)

1996 TREND ASSESSMENT

The soil trend is up with a significant decline in percent bare ground (19% to <1%) and an increase in litter cover. Vegetation and litter cover are very abundant, well dispersed and effectively limit erosion. The browse trend appears stable but limited in density. The change in density from 1990 to 1996 is mostly the result of the much larger sample used in 1996, because the number of dead in the population cannot explain the drop in density. Oak appears to be unutilized with a stable population density. The herbaceous understory is poor and dominated by annual grasses and perennial weeds. Cheatgrass and rattail fescue account for 79% of the grass cover, while common ragweed and hairy goldaster provide 79% of the forb cover. The only useful species on the site that is fairly common is sand dropseed. Sum of nested frequency for perennial grasses and forbs declined since 1990. Trend is considered down.

TREND ASSESSMENT
soil - up (5)
browse - stable but very low population (3)
herbaceous understory - down and in poor condition and composition (1)

HERBACEOUS TRENDS --
Herd unit 03 , Study no: 7

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %
		'84	'90	'96	'84	'90	'96	'96
G	Aristida purpurea	$_{b}$161	$_{c}$212	$_{a}$115	70	83	53	4.99
G	Bromus tectorum (a)	-	-	384	-	-	100	26.94
G	Festuca myuros (a)	-	-	139	-	-	48	2.77
G	Poa bulbosa	-	1	-	-	1	-	-
G	Poa pratensis	-	2	-	-	1	-	-
G	Poa secunda	5	10	3	2	5	1	.03
G	Sporobolus cryptandrus	$_{a}$35	$_{ab}$50	$_{b}$81	18	22	35	2.69
Total for Annual Grasses		0	0	523	0	0	148	29.72
Total for Perennial Grasses		201	275	199	90	112	89	7.71
Total for Grasses		201	275	722	90	112	237	37.43
F	Alyssum alyssoides (a)	-	-	11	-	-	5	.02
F	Ambrosia artemisifolia	$_{b}$226	$_{a}$61	$_{a}$101	80	29	44	3.47
F	Artemisia ludoviciana	19	15	26	7	5	9	1.10
F	Astragalus utahensis	$_{b}$14	$_{a}$6	$_{a}$-	8	3	-	.21
F	Cuscuta spp.	-	-	-	-	-	-	.03
F	Erodium cicutarium (a)	-	-	47	-	-	18	.29
F	Euphorbia spp.	$_{a}$-	$_{a}$-	$_{b}$23	-	-	13	.29
F	Heterotheca villosa	$_{a}$70	$_{b}$206	$_{a}$81	32	79	40	6.87
F	Isatis tinctoria	$_{a}$-	$_{b}$63	$_{a}$7	-	27	3	.10
F	Lactuca serriola	-	7	-	-	3	-	-
F	Lygodesmia grandiflora	$_{a}$-	$_{a}$-	$_{b}$13	-	-	7	.67
F	Tragopogon dubius	-	-	1	-	-	1	.00
Total for Annual Forbs		0	0	58	0	0	23	0.31
Total for Perennial Forbs		329	358	252	127	146	117	12.75
Total for Forbs		329	358	310	127	146	140	13.06

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 03 , Study no: 7

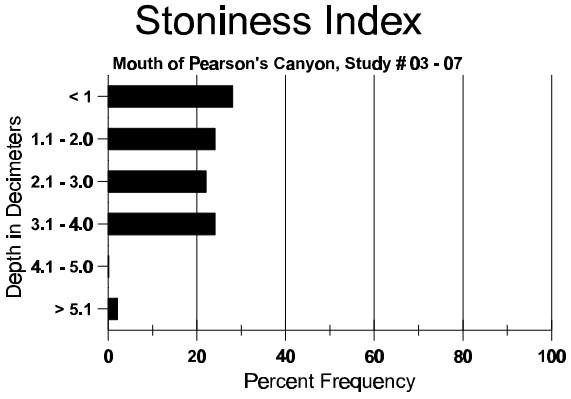
Type	Species	Strip Frequency '96	Average Cover % '96
B	Artemisia tridentata wyomingensis	4	.93
B	Opuntia fragilis	8	.15
Total for Browse		12	1.08

BASIC COVER --
Herd unit 03 , Study no: 7

Cover Type	Nested Frequency '96	Average Cover % '84	'90	'96
Vegetation	393	9.50	14.00	56.20
Rock	228	7.00	8.00	11.60
Pavement	161	16.00	13.00	2.90
Litter	395	54.00	46.25	59.95
Cryptogams	23	0	0	.10
Bare Ground	66	13.50	18.75	.53

SOIL ANALYSIS DATA --
Herd Unit 03, Study no: 07, Mouth of Pearson's Canyon

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
14.1	75.8 (12.8)	6.8	77.6	10.4	12.0	1.3	13.8	105.6	.4



PELLET GROUP FREQUENCY --
Herd unit 03 , Study no: 7

Type	Quadrat Frequency '96
Rabbit	4
Deer	3
Cattle	1

BROWSE CHARACTERISTICS --
Herd unit 03 , Study no: 7

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata wyomingensis																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	4	-	-	1	-	-	-	-	-	5	-	-	-	166			5
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	84	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	90	5	-	-	-	-	-	-	-	-	5	-	-	-	166			5
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	84	-	1	-	-	-	-	-	-	-	1	-	-	-	33	24	39	1
	90	9	-	-	-	-	-	-	-	-	8	-	1	-	300	26	20	9
	96	1	3	-	-	-	-	-	-	-	4	-	-	-	80	22	48	4
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	50%	00%	00%	+86%
'90	00%	00%	07%	-79%
'96	60%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'84	66	Dec:		-
'90	466			-
'96	100			-

Chrysothamnus nauseosus albicaulis																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	37	72	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	00%	00%	00%	
'96	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'84	0	Dec:	-
'90	0		-
'96	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia fragilis																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	2	-	-	-	-	-	-	-	-	1	-	1	-	66			2
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33	5	9	1
	96	10	-	-	-	-	-	-	-	-	10	-	-	-	200	7	14	10

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	00%	00%	33%	+55%
'96	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'84	0		-
	'90	99		-
	'96	220		-

Quercus gambelii																		
M	84	-	-	-	-	1	-	-	-	-	1	-	-	-	33	69	61	1
	90	-	-	-	-	-	-	1	-	-	1	-	-	-	33	98	106	1
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	38	46	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	100%	00%	00%	+ 0%
'90	00%	00%	00%	
'96	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'84	33		-
	'90	33		-
	'96	0		-